

Zhu Wang

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Education

B.S. Information & Computational Mathematics, Sichuan University, China, 2003

M.S. Computational Mathematics, Sichuan University, China, 2006

Ph.D. Applied Mathematics, Virginia Tech, USA, 2012

Academic Positions

University of South Carolina, Columbia, South Carolina, USA

- Director of Calculus, Department of Mathematics, 2024 - Present
- Professor, Department of Mathematics, 2023 - Present
- Associate Professor, Department of Mathematics, 2018 - 2022
- Assistant Professor, Department of Mathematics, 2014 - 2018

University of Minnesota, Twin Cities, Minnesota, USA

- Industrial Postdoc, Institute for Mathematics and its Applications, 2012 - 2014

University of Electronic Science and Technology of China, Sichuan Province, China

- Lecturer, School of Mathematical Science, 2006 - 2007

Long-term Visits:

Brown University, Providence, Rhode Island, USA

- Research Fellow, Institute for Computational and Experimental Research in Mathematics, Spring 2020

Argonne National Laboratory, Argonne, Illinois, USA

- Givens Associate, Mathematics and Computer Science Division, summers of 2010 and 2011

Supervision of Student Research

- Undergraduate students: Cindy Van, 2024 - present; Zachary Valsecchi, 2024 - present; Peyton Matheson, 2024 - present; Cody Coleman, 2023 - present; Widny Seizeme, Magellan Scholar, 2023 - present; Jasdeep Singh, 2023 - 2024

- Graduate students: Jasdeep Singh, PhD, 2024 - present; Sabrina Rashid, PhD, 2022 - present; Anu Vasudevan (co-advisor), PhD, 2022 - present; Yuwei Geng, PhD, 2021 - present; Yuankai Teng (co-advisor), PhD, 2019 - 2023; Megan McKay, MS, 2020 - 2022; Shuai Yuan, PhD, 2014 - 2020; Chenfei Zhang (co-advisor), PhD, 2014 - 2019
- Postdoctoral fellow: Rihui Lan (co-supervisor), February 2020 - November 2022; Xucheng Meng (co-supervisor), September 2018 - July 2019; Thi Thao Phuong Hoang (co-supervisor), January 2017 - August 2018

Research Interests

Scientific Computing, Data Science, Numerical Analysis, Climate Modeling, Reduced-Order Modeling

Grants

- National Science Foundation, FRG: Variationally Stable Neural Networks for Simulation, Learning, and Experimental Design of Complex Physical Systems, Co-PI, 08/16/23-08/15/26, \$599,999.00
- SC Research Foundation, Structure-Preserving Model Reduction of Tethered Unmanned Air-Surface Vehicle Control, PI, 07/01/2023-09/30/2024, \$15,000.00
- Office of Naval Research, Nonlinear Data-Driven and Structure-Preserving Hamiltonian Model Reduction (N00014-22-1-2624), Co-PI, 08/01/22-07/31/25, \$69,099.00 to USC
- National Science Foundation, State and Parameter Estimation: Variationally Stable Models and Physics-Informed Learning (DMS 2012469), Co-PI, 08/15/2020-07/31/2024, \$224,607.00
- Department of Energy, Efficient and Scalable Time-Stepping Algorithms and Reduced-Order Modeling for Ocean System Simulations (DE-SC0020270), Co-PI, 9/1/2019-8/31/2022, \$375,000.00
- National Science Foundation, Efficient Numerical Simulations of Oceanic Flows with Application to Ocean Modeling (DMS 1913073), PI, 7/15/2019-6/30/2022, \$167,916.00
- SC Research Foundation, Conservative Local Time Stepping for Oceanic Flow Simulations, PI, 07/01/2019-09/30/2020, \$14,590.00
- National Science Foundation, The Ninth Annual Graduate Student Mini-conference in Computational Mathematics (DMS 1748357), PI, 01/01/2018-12/31/2018, \$7,280.00
- Department of Energy, Grid Generation, Coupling Strategies, and Spatially-dependent Time Stepping for Ocean-tidal/Estuary Systems and other ESM Components (DE-SC0016540), Co-PI, 09/01/2016-08/31/2019, \$584,495.00
- National Science Foundation, Collaborative Research: Reduced Order Modeling of Realistic Noisy Flows (DMS 1522672), PI, 07/01/2015-06/30/2018, \$111,258.00
- SC Research Foundation, Reduced Order Modeling of Complex Fluid Flows, PI, 05/16/2015-08/15/2016, \$13,989.00

Publications

Journal Articles

In print

1. Y. Geng, J. Singh, L. Ju, B. Kramer, and Z. Wang Gradient Preserving Operator Inference: Data-Driven Reduced-Order Models for Equations with Gradient Structure. **Comput. Meth. Appl. Mech. Eng.**, Vol. 427, 2024, Article 117033.
2. Y. Geng, Y. Teng, Z. Wang and L. Ju A deep learning method for the dynamics of classic and conservative Allen-Chan equations based on fully-discrete operators. **J. Comput. Phys.**, Vol. 496, 2024, Article 112589.
3. R. Lan, L. Ju, Z. Wang and M. Gunzburger. A second-order implicit-explicit scheme for the baroclinic-barotropic split system of primitive equations. **Commun. Comput. Phys.**, Vol. 34(5), 2023, pp. 1306-1331.
4. Y. Teng, Z. Wang, L. Ju, A. Gruber and G. Zhang. Level Set Learning and Function Approximation on Sparse Data through Pseudo-Reversible Neural Network. **SIAM J. Sci. Comput.**, vol 45(3), 2023
5. A. Gruber, M. Gunzburger, L. Ju, R. Lan and Z. Wang. Multifidelity Monte Carlo Estimation for Efficient Uncertainty Quantification in Climate-Related Modeling. **Geosci. Model Dev.**, vol. 16(4), 2023, pp. 1213-1229
6. A. Gruber, M. Gunzburger, L. Ju and Z. Wang. A multifidelity Monte Carlo method for realistic computational budgets. **J. Sci. Comput.**, vol. 94, 2023, Article 2
7. A. Gruber, M. Gunzburger, L. Ju and Z. Wang. Energetically consistent model reduction for metriplectic systems. **Comput. Meth. Appl. Mech. Eng.**, vol. 404, 2023, Article 115709
8. Y. Chen, L. Ji and Z. Wang. A Hyper-Reduced MAC Scheme for the Parametric Stokes and Navier-Stokes Equations. **J. Comp. Phys.**, vol. 466, 2022, Article 111412
9. B. Koc, C. Mou, H. Liu, Z. Wang, G. Rozza, and T. Iliescu. Verifiability of the Data-Driven Variational Multiscale Reduced Order Model. **J. Sci. Comput.**, vol, 93, 2022, Article 54
10. W. Dahmen, M. Wang and Z. Wang. Nonlinear Reduced DNN Models for State Estimation. **Commun. Comput. Phys.**, vol. 32 (1), 2022, pp.1-40
11. W. Hu, J. Liu and Z. Wang. Bilinear Control of Convection-Cooling: From Open-Loop to Closed-Loop. **Appl. Math. Optim.**, vol. 86, 2022, Article 5
12. A. Gruber, M. Gunzburger, L. Ju and Z. Wang. A Comparison of Neural Network Architectures for Data-Driven Reduced-Order Modeling. **Comput. Meth. Appl. Mech. Eng.**, Vol. 393, 2022, Article 114764
13. R. Lan, L. Ju, Z. Wang, M. Gunzburger and P. Jones. High-Order Multirate Explicit Time-Stepping Schemes for the Baroclinic-Barotropic Split Dynamics in Primitive Equations. **J.**

- Comp. Phys.**, Vol. 457, 2022, Article 111050
14. X. Feng, Y. Luo, L. Vo and *Z. Wang*. An Efficient Iterative Method for Solving Parameter-Dependent and Random Diffusion Problems. **J. Sci. Comput.**, Vol. 90, 2022, Article 72
 15. H. Sharma, *Z. Wang* and B. Kramer. Hamiltonian Operator Inference: Physics-Preserving Learning of Reduced-Order Models for Hamiltonian Systems. **Physica D: Nonlinear Phenomena**, Vol. 431, 2022, Article 133122
 16. J. Liu and *Z. Wang*. A ROM-Accelerated Parallel-in-Time Preconditioner for Solving All-at-once Systems from Evolutionary PDEs. **Appl. Math. Comput.**, Vol. 416, 2021, Article 126750
 17. L. Feng, G. Fu and *Z. Wang*. A FOM/ROM Hybrid Approach for Accelerating Numerical Simulations. **J. Sci. Comput.**, Vol. 89, 2021, Article 61
 18. R. Lan, W. Leng, *Z. Wang*, L. Ju and M. Gunzburger. Parallel Exponential Time Differencing Methods for Geophysical Flow Simulations. **Comput. Meth. Appl. Mech. Eng.**, Vol. 387, 2021, Article 114151
 19. A. Gruber, M. Gunzburger, L. Ju, Y. Teng and *Z. Wang*. Nonlinear Level Set Learning for Function Approximation on Sparse Data with Applications to Parametric Differential Equations. **Numer. Math. Theor. Meth. Appl.**, Vol. 14(4), 2021, pp. 839-861.
 20. C. Mou, *Z. Wang*, D. Wells, X. Xie and T. Iliescu. Reduced Order Models for the Quasi-Geostrophic Equations: A Brief Survey. **Fluids**, vol. 6(1), 2021, 16
 21. X. Meng, T. Hoang, *Z. Wang*, and L. Ju. Localized Exponential Time Differencing Methods for Shallow Water Equations: Algorithms and Numerical Study. **Commun. Comput. Phys.**, Vol. 29(1), 2021, pp.80-110
 22. G. Fu and *Z. Wang*, POD-(H)DG Method for Incompressible Flow Simulations. **J. Sci. Comput.**, vol. 85, 2020, Article 24
 23. L. Ju, W. Leng, *Z. Wang* and S. Yuan. Numerical Investigation of Ensemble Methods with Block Iterative Solvers for Evolution Problems. **Discrete Contin. Dyn. Syst. Ser. B.**, Vol. 25(12), 2020, pp. 4905-4923
 24. T. Hoang, L. Ju, and *Z. Wang*. Nonoverlapping Localized Exponential Time Differencing Methods for Diffusion Problems. **J. Sci. Comput.**, Vol. 82, 2020, Article 37
 25. T. Hoang, L. Ju, W. Leng, and *Z. Wang*. High Order Explicit Local Time-Stepping Methods for Hyperbolic Conservation Laws. **Math. Comp.**, vol. 89, 2020, pp. 1807-1842
 26. M. Gunzburger, N. Jiang and *Z. Wang*. An Efficient Algorithm for Simulating Ensembles of Parameterized Flow Problems, **IMA J. Numer. Anal.**, vol. 39 (3), 2019, pp. 1180-1205
 27. M. Gunzburger, N. Jiang and *Z. Wang*. A Second-Order Time-Stepping Scheme for Simulating Ensembles of Parameterized Flow Problems, **Comput. Math. Appl. Math.**, vol. 19 (3), 2019, pp. 681-701

28. J. Liu and Z. Wang. Non-Commutative Discretize-then-Optimize Algorithms for Elliptic PDE-Constrained Optimal Control Problems, **J. Comp. Appl. Math.**, vol. 362, 2019, pp. 596-613
29. T. Hoang, W. Leng, L. Ju, Z. Wang, and K. Pieper. Conservative Explicit Local Time-Stepping Schemes for the Shallow Water Equations, **J. Comp. Phys.**, vol. 382, 2019, pp. 152-176
30. Y. Luo and Z. Wang. A Multilevel Monte Carlo Ensemble Scheme for Solving Random Parabolic PDEs, **SIAM J. Sci. Comput.**, vol. 41 (1), 2019, pp. A622-A642
31. T. Hoang, L. Ju and Z. Wang. Overlapping Localized Exponential Time Differencing Methods for Diffusion Problems, **Comm. Math. Sci.**, vol. 16(6), 2018, pp. 1531-1555
32. Y. Luo and Z. Wang. An Ensemble Algorithm for Numerical Solutions to Deterministic and Random Parabolic PDEs, **SIAM J. Numer. Anal.**, vol. 56 (2), 2018, pp. 859-876
33. J. Liu and Z. Wang. Efficient Time Domain Decomposition Algorithms for Parabolic PDE-Constrained Optimization Problems, **Comput. Math. Appl.**, vol. 75 (6), 2018, pp. 2115-2133
34. H. Fu, H. Wang, and Z. Wang. POD/DEIM Reduced-Order Modeling of Time-Fractional Partial Differential Equations with Applications in Parameter Identification, **J. Sci. Comput.**, vol. 74 (1), 2018, pp. 220-243
35. X. Xie, D. Wells, Z. Wang, and T. Iliescu. Numerical Analysis of the Leray Reduced Order Model, **J. Comp. Appl. Math.**, vol. 328, 2018, pp. 12-29
36. B. Cockburn and Z. Wang. Adjoint-based, Superconvergent Galerkin Approximations of Linear Functionals, **J. Sci. Comput.**, vol. 73 (2-3), 2017, pp. 644-666
37. L. Ju and Z. Wang. Exponential Time Differencing Gauge Method for Incompressible Viscous Flows, **Comm. Comp. Phys.**, vol. 22, 2017, pp. 517-541
38. D. Wells, X. Xie, Z. Wang and T. Iliescu. An Evolve-Then-Filter Regularized Reduced Order Model For Convection-Dominated Flows, **Int. J. Numer. Meth. Fluids**, vol. 84, 2017, pp. 598-615
39. Y. Gong, Q. Wang and Z. Wang. Structure-Preserving Galerkin POD Reduced-Order Modeling of Hamiltonian Systems, **Comput. Meth. Appl. Mech. Eng.**, vol. 315, 2017, pp. 780-798
40. X. Xie, D. Wells, Z. Wang, and T. Iliescu. Approximate Deconvolution Reduced Order Modeling, **Comput. Meth. Appl. Mech. Eng.**, vol. 313, 2017, pp. 512-534
41. J. Borggaard, Z. Wang and L. Zietsman. A Goal-Oriented Model Reduction Approach for Complex Systems, **Comput. Math. Appl.** 71 (11), 2016, pp. 2155-2169
42. Z. Wang, B. McBee and T. Iliescu. Approximate Partitioned Methods of Snapshots for POD, **J. Comput. Appl. Math.**, vol. 307, 2016, pp. 374-384

43. L. Rondi, F. Santosa and *Z. Wang*. A Variational Approach to the Inverse Photolithography Problem, **SIAM J. Appl. Math.**, vol. 76 (1), 2016, pp. 110-137
44. *Z. Wang*. Nonlinear Model Reduction Based on the Finite Element Method With Interpolated Coefficients: Semilinear Parabolic Equations. **Numer. Meth. Partial. Diff. Eqs.** vol. 31 (6), 2015, pp. 1713-1741
45. T. Iliescu and *Z. Wang*. Are the Snapshot Difference Quotients Needed in the Proper Orthogonal Decomposition? **SIAM J. Sci. Comput.**, vol. 36 (3), 2014, pp. A1221-A1250
46. T. Iliescu and *Z. Wang*. Variational Multiscale Proper Orthogonal Decomposition: Navier-Stokes Equations. **Numer. Meth. Partial. Diff. Eqs.**, vol. 30, 2014, pp. 641-663
47. T. Iliescu and *Z. Wang*. Variational Multiscale Proper Orthogonal Decomposition: Convection-Dominated Convection-Diffusion Equations. **Math. Comp.**, vol. 82, 2013, pp. 1357-1378
48. E. Foster, T. Iliescu, and *Z. Wang*. A Finite Element Discretization of the Streamfunction Formulation of the Stationary Quasi-Geostrophic Equations of the Ocean. **Comput. Meth. Appl. Mech. Eng.**, vol. 261-262, 2013, pp. 105-117
49. J. Huang, *Z. Wang* and R. Zhu. Asymptotic Error Expansions for Hypersingular Integrals. **Adv. Comput. Math.**, vol. 38 (2), 2013, pp. 257-279
50. *Z. Wang*, I. Akhtar, J. Borggaard and T. Iliescu. Proper Orthogonal Decomposition Closure Models for Turbulent Flows: A Numerical Comparison. **Comput. Meth. Appl. Mech. Eng.**, vol. 237-240, 2012, pp. 10-26
51. O. Roderick, M. Anitescu and *Z. Wang*. Reduced Order Approximations in Uncertainty Analysis of Nuclear Engineering Applications. **Trans. Am. Nucl. Soc.**, vol. 106, 2012
52. I. Akhtar, *Z. Wang*, J. Borggaard and T. Iliescu. Jacobian Based Nonlinear Closure for Reduced-Order Models. **J. Comp. Nonlinear Dynamics**, vol. 7 (3), 034503, 2012
53. P. Cheng, J. Huang, *Z. Wang* and G. Zeng. Nyström Methods and Extrapolation for Solving Steklov Eigensolutions and its Application in Elasticity. **Numer. Meth. Partial. Diff. Eqs.**, vol. 28 (6), pp. 2021-2040, 2012
54. P. Cheng, X. Luo, *Z. Wang* and J. Huang. Mechanical Quadrature Methods and Extrapolation Algorithms for Boundary Integral Equations with Linear Boundary Conditions in Elasticity. **J. Elasticity**, vol. 108 (2), pp. 193-207, 2012
55. W. Feng, X. He, *Z. Wang* and X. Zhang. Non-Iterative Domain Decomposition Methods for a Non-Stationary Stokes-Darcy Model with Beavers-Joseph Interface Condition. **Appl. Math. Comput.**, vol. 219 (2), 2012, pp. 453-463
56. *Z. Wang*, I. Akhtar, J. Borggaard and T. Iliescu. Two-Level Discretizations of Nonlinear Closure Models for Proper Orthogonal Decomposition. **J. Comput. Phys.**, vol. 230 (1), 2011, pp. 126-146
57. J. Borggaard, T. Iliescu and *Z. Wang*. Artificial Viscosity Proper Orthogonal Decomposition. **Math. Comput. Model.**, vol. 53 (1-2), 2011, pp. 269-279

58. O. Roderick, *Z. Wang* and M. Anitescu. Dimensionality Reduction for Uncertainty Quantification of Nuclear Engineering Models. **Trans. Am. Nucl. Soc.**, vol. 104, 2011
59. O. San, A. E. Staples, *Z. Wang* and T. Iliescu. Approximate Deconvolution Large Eddy Simulation of a Barotropic Ocean Circulation Model. **Ocean Modelling**, vol. 40, 2011, pp. 120-132
60. P. Cheng, J. Huang and *Z. Wang*. Mechanical Quadrature Methods and Extrapolation for Solving Nonlinear Boundary Helmholtz Integral Equations. **Appl. Math. Mech. (Eng. Ed.)**, vol. 32 (12), 2011, pp. 1505-1514
61. B. Hu and *Z. Wang*. Combined Hybrid Method Applied in the Reissner-Mindlin Plate Model. **Finite Elem. Anal. Des.**, vol. 46 (5), 2010, pp. 428-437
62. J. Huang and *Z. Wang*. Extrapolation Algorithms for Solving Mixed Boundary Integral Equations of the Helmholtz Equation by Mechanical Quadrature Methods. **SIAM J. Sci. Comput.**, vol. 31 (6), 2009, pp. 4115-4129
63. *Z. Wang* and B. Hu. Research of Combined Hybrid Method Applied in the Reissner-Mindlin Plate Model. **Appl. Math. Comput.**, vol. 182 (1), 2006, pp. 49-66

Conference Proceedings

64. Y. Teng, X. Zhang, *Z. Wang* and L. Ju. Learning Green's Functions of Linear Reaction-Diffusion Equations with Application to Fast Numerical Solver. **Proceeding of Machine Learning Research**, 3rd Annual Conference on Mathematical and Scientific Machine Learning, 2022
65. I. Akhtar, *Z. Wang*, J. Borggaard and T. Iliescu. A Novel Strategy for Nonlinear Closure in Proper Orthogonal Decomposition Reduced-Order Models. ASME ECTC October 1-2, 2010, Atlanta, GA
66. I. Akhtar, *Z. Wang*, J. Borggaard and T. Iliescu. Large Eddy Simulation Ideas for Nonlinear Closure in Model Reduction of Fluid Flows. 5th Flow Control Conference June 28-July 1, 2010, Chicago, Illinois, **AIAA 2010-5089**
67. I. Akhtar, J. Borggaard, T. Iliescu and *Z. Wang*. Residual-Based Closure for the Stability of Reduced-Order Models. 48th AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition January 4-7, 2010, Orlando, Florida, **AIAA 2010-1276**
68. J. Borggaard, A. Duggleby, A. Hay, T. Iliescu and *Z. Wang*. Reduced-Order Modeling of Turbulent Flows. **In Proceedings of MTNS**, 2008

Honors

- Breakthrough Star Award, University of South Carolina, 2019
- SIAM CSE 3rd BGCE Student Paper Prize Finalist, Reno, NV, 2011
- Winner of the 34th SIAM SEAS Conference Student Paper Competition, Raleigh, NC, 2010

- C. B. Ling Scholarship, Virginia Tech, 2008-2009
- Excellent Graduate Medal, Department of Education of Sichuan Province, China, 2006
- First Prize of National Post-Graduate Mathematical Contest in Modeling, China, 2004 and 2005

Professional Community Services

Editorial Board

- International Journal of Numerical Analysis and Modeling (IJNAM), January 2023 - Present
- Journal on Numerical Methods and Computer Applications, January 2024 - Present

Guest Editor

- Computers & Mathematics with Applications: for the special issue of 2nd Annual Meeting of SIAM Central States Section (2016).

Leadership

- Secretary/Treasurer of the SIAM Southeastern Atlantic Section in 2022 and 2023.

Organized/Co-organized Conferences

- The SIAM Southeastern Atlantic Section Annual Meeting, Blacksburg, VA, March 25-26, 2023
- The 9th annual graduate student mini-conference in Computational Mathematics, Columbia, SC, February 17-18, 2018
- The 2nd Annual Meeting of SIAM Central States Section, Little Rock, AR, September 30–October 2, 2016

Organized/Co-organized REU Programs

- REU Summer School on Mathematical Foundation of Data Science, June 3, 2024 - July 12, 2024. Students mentees: Cindy Van (University of South Carolina), Josie Dieu (University of Arizona), Shahyad Khamnei (Boston University), Peyton Matheson (University of South Carolina), Casten Yeung (Oregon State University)
- REU Summer School on Mathematical Foundation of Data Science, June 6, 2024 - July 15, 2022. Students mentees: Cade Stanley (University of South Carolina), Jasdeep Singh (University of South Carolina), Malcolm Gaynor (Kenyon College), Peter Luo (Harvard University)

Organized/Co-organized Mini-symposia

- Deep Learning Methods for Data Driven Models, The 44th SIAM Southeastern Atlantic Section Conference(SIAM-SEAS), Auburn, AL, September 18-19, 2021
- Recent Advances in Numerical Methods for Fluid Flow with Applications, The 40th SIAM Southeastern Atlantic Section Conference(SIAM-SEAS), Athens, GA, March 12-13, 2016
- Recent Advances in Numerical Methods for Fluid Flows, 1st SIAM CSS Meeting, Rolla, MO, April 11-12, 2015
- Recent Advances in Numerical Methods for Fluid Flow Problems, AMS Fall Southeastern Sectional Meeting, Greensboro, 2014
- Nonlinear Model Reduction of Complex Flows: Modeling, Analysis, and Computations, SIAM CSE13, Boston, February 25-March 1, 2013

Other Professional Activities*Invited Colloquium/Seminar Talks*

- Seminar, Wuhan University, July 4, 2024
- RTG Seminar, University of South Carolina, January 20, 2023
- Seminar, Shanghai Jiao Tong University, November 03, 2022
- Seminar, Wuhan University, Virtual, May 24, 2022
- Colloquium, Michigan Tech University, March 18, 2022
- Seminar, Wuhan University, Virtual, July 2, 2021
- Colloquium, Southern Illinois University, April 5, 2019
- Scientific Computing Seminar, Brown University, March 22, 2019
- Seminar, Chinese Academy of Sciences, Beijing, July 19, 2018
- Seminar, Shanghai Tech University, Shanghai, July 4, 2018
- Seminar, University of Electronic Science and Technology of China, Chengdu, June 15, 2018
- Seminar, Sichuan University, Chengdu, June 9, 2018
- Seminar, Beijing Institute University, Beijing, June 4, 2018
- CAM seminar, University of Tennessee, Knoxville, October 12, 2016
- CSE seminar, University of South Carolina, Columbia, SC, September 9, 2016
- Lecture, Shandong University, Jinan, China, June 2, 2016

- Seminar, Beihang University, Beijing, China, May 31, 2016
- CSRC Seminar, Beijing Computational Science Research Center, China, May 26, 2016
- CSRC Seminar, Beijing Computational Science Research Center, China, July 21, 2015
- Lecture Series on Scientific Computing, Sichuan University, China, July 17, 2015
- Applied Mathematics Seminar, Auburn University, April 17, 2015
- Computational Mathematics Seminar, Clemson University, November 20, 2014
- Computational Mathematics Seminar, University of Pittsburgh, November 11, 2014
- Department of Mathematics, University of South Carolina, December 5, 2013
- Computer Science and Mathematics Division Seminar, Oak Ridge National Laboratory, February 22, 2012
- Farhat Research Group Seminar, Stanford University, February 9, 2012
- Mathematics and Computer Science Division Seminar, Argonne National Laboratory, January 31, 2012
- Computing Sciences Directorate Seminar, Lawrence Berkeley National Laboratory, January 20, 2012

Invited Mini-symposium Talks

- Joint Mathematics Meeting, San Francisco, CA, January 6, 2024
- The 10th International Congress on Industrial and Applied Mathematics (ICIAM), Toyko, Japan, August 25, 2023.
- 2023 SIAM DS Meeting, Portland, OR, May 15, 2023
- 2022 Copper Country Workshop on Applied Mathematics, Statistics, and Data Sciences, July 6, 2022
- 2022 Virginia Tech ICAM workshop, June 2, 2022
- 2021 SIAM CSE Meeting (Virtual), March 1, 2021
- ICERM workshop on Algorithms for Dimension and Complexity Reduction, Brown University, March 25, 2020
- AMS-MAA Joint Meeting 2020, Denver, CO, January 18, 2020
- 2019 AMS Fall Central Sectional Meeting, University of Wisconsin, Madison, September 14, 2019
- 2019 AMS Spring Southeastern Sectional Meeting, Auburn, March 16, 2019

- 2019 SIAM CSE Meeting, Spokane, February 25, 2019
- 4th SIAM CSS Meeting, University of Oklahoma, Norman, OK, Oct 6, 2018
- Conference on Classical and Geophysical Fluid Dynamics: Modeling, Reduction and Simulation, Virginia Tech, June 26-28, 2017
- 2017 AMS Spring Southeastern Sectional Meeting, Charleston, March 11, 2017
- 2017 SIAM CSE Meeting, Atlanta, February 28, 2017
- 2016 AMS Fall Southeastern Sectional Meeting, Raleigh, November 12-13, 2016
- 2016 AMS Fall Western Sectional Meeting, Denver, CO, October 9, 2016
- 2nd SIAM CSS Meeting, University of Arkansas, Little Rock, AR, October 1, 2016
- 2016 SIAM Annual Meeting, Boston, MA, July 11, 2016
- 2016 SIAM SEAS Meeting, Athens, GA, March 12, 2016
- 2015 ICIAM, Beijing, China, August 14, 2015
- 2015 SIAM SEAS Meeting, Birmingham, AL, March 20, 2015
- 2014 AMS Fall Southeastern Sectional Meeting, Greensboro, November 8-9, 2014
- 2014 SIAM Annual Meeting (AN14), Chicago, July 7-11, 2014
- The SIAM Conference on Control and Its Applications (CT13), San Diego, July 8-10, 2013
- 2013 SIAM Annual Meeting (AN13), San Diego, July 8-12, 2013
- 2013 SIAM Applications of Dynamical Systems (DS13), Snowbird, May 19-23, 2013
- 2013 SIAM Computational Science and Engineering (CSE13), Boston, February 25-March 1, 2013
- 8th International Purdue Symposium on Statistics, Purdue Statistics, June 23, 2012
- 36th SIAM Southeastern Atlantic Section Conference, University of Alabama in Huntsville, March 24, 2012
- AMS Western Section Meeting, Las Vegas, NV, April 30-31, 2011
- 35th SIAM Southeastern-Atlantic Section Conference, Charlotte, NC, March 26-27, 2011
- SIAM Computational Science and Engineering (CSE11), Reno, NV, March 1-5, 2011